

Dairy farm doubles milk production while keeping energy bill down

Case Study

Sector:
Agriculture

Company:
Dygert Farms

Location:
Palatine Bridge, NY

Measures Implemented:

- Efficient lighting
- Motors
- Plate cooler
- Variable speed drive

Energy Savings Results:
17,000 kWh of electricity
\$2,400 annually



Dygert Family. (Photo credit: Renee Knapp)

Background

Robert Dygert is a 13th-generation dairy farmer in Montgomery County, NY. He is carrying on the family tradition, which started when the Queen of England deeded land to the Dygert family's German ancestors in 1723. Robert helped on the family farm until he entered college. In 2002, he graduated from Cornell University with a bachelor's degree in animal science. Robert worked on other farms in New York State before returning to his family's farm, which he and his wife, Shannon, now own and operate in Palatine Bridge, NY.

New York State Energy Research and Development Authority (NYSERDA) helped Robert and Shannon to double annual milk production on their 300-acre dairy farm with little to no increase in electricity costs.

Recommendations

Robert first learned about NYSERDA while studying how big farms increase production. He received a farm energy assessment to understand how his farm was performing. The assessment provided recommendations for electrical energy efficiency improvement measures. The recommended measures were estimated to save 17,000 kWh of electricity, translating to \$2,400 annually.

Robert reviewed the assessment to determine which recommended measures he could implement to start realizing energy savings. NYSERDA's implementation contractor helped the Dygerts through the process of implementing the recommended measures.

In 2011, Robert was approved for support to replace incandescent lighting with efficient fluorescent lighting fixtures in two barns, to upgrade efficient motors, and install a plate cooler and variable speed drives on the transfer pump and vacuum pump. The plate cooler uses well water to cool the milk from body temperature prior to loading in the bulk storage tank. The warmed water is then used in equipment washup. The variable speed drive on the transfer pump optimizes the cooling that the plate cooler provides.



“Working with NYSERDA was pretty simple, and making the energy efficiency improvements helped us to double the size of our herd and double milk production with just a tiny increase to electricity costs. I recommended NYSERDA to neighboring farms.”

— Robert Dygert, Dygert Farms

The variable speed drive on the vacuum pump reduces the energy consumed by running the pump at the required level, which fluctuates during milking, rather than full power for the entire milking. Robert was so pleased with the efficiency he achieved on his farm, he worked with NYSERDA on a second project. In 2013, Robert installed high-efficiency scroll compressors and electronic expansion valves to more efficiently cool his milk. He also installed eight 52-inch ventilation fans in the milking parlor barn because cool, comfortable cows produce more milk.

Results

With support from NYSERDA, Robert was able to double the size of his herd to 104 milking cows which, in turn, doubled his farm’s annual milk production. The Dygerts are now producing approximately 2.2 million pounds of milk with only a slight increase in electricity usage. Robert says he has maximized the efficiency of the existing farm and plans to add another 100 cows. He will need to build a new barn to house the cows. Naturally, he said, energy efficiency is part of the plan.

The NYSERDA Agriculture Energy Audit Program

Through the Agriculture Energy Audit Program, NYSERDA offers technical assistance to identify energy efficiency measures for eligible farms and on-farm producers, including but not limited to: dairies, orchards, greenhouses, vegetables, vineyards, grain dryers, and poultry/egg. NYSERDA will assign Flexible Technical Assistance (FlexTech) Program Consultants to perform energy audits for eligible farms.



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